

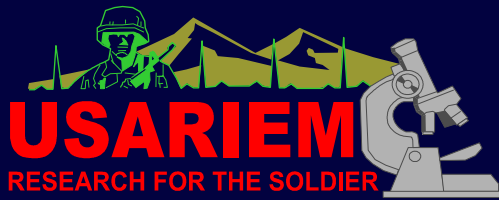


Healthy Weight Management for Military Personnel

LTC Gaston P. Bathalon, PhD, RD

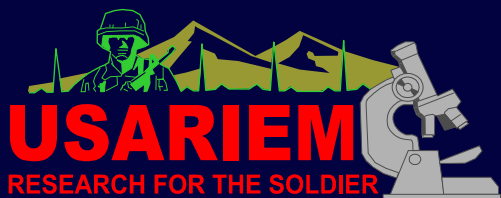
US Army Research Institute of Environmental Medicine

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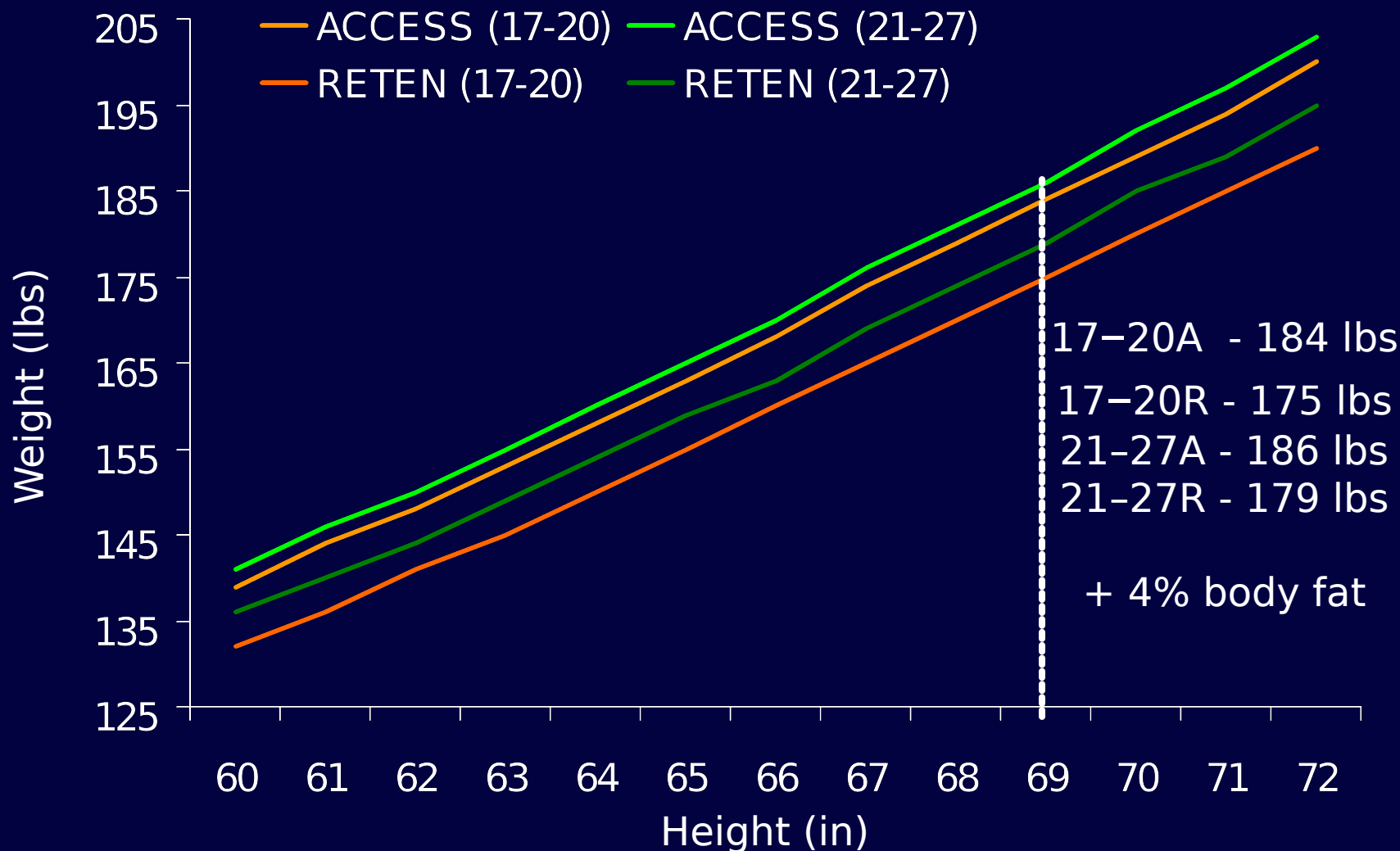


Outline

- Army accession vs. retention standards
- Change in weight after basic training
- Trends
- Attrition
- Change in retention standards (AR 600-9)
- Study suggestions
- Research concerns

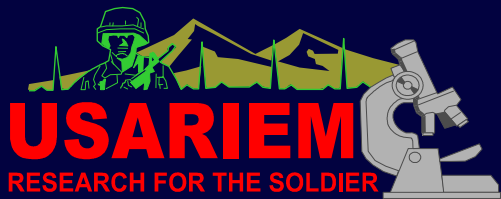


Male weight-for-height standards

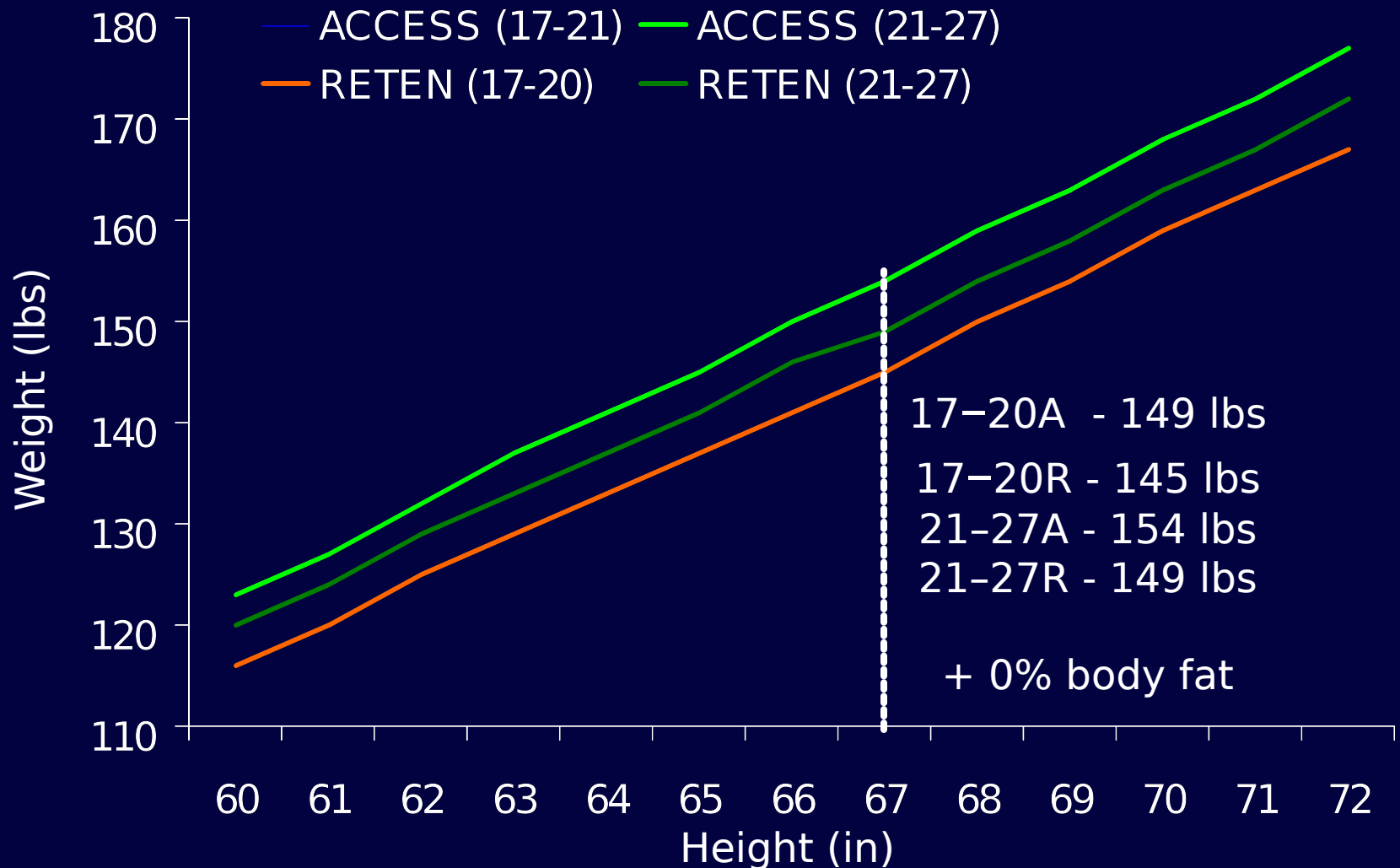


AR 600-9, The Army Weight Control Program, 1987

AR 40-501, Standards of Medical Fitness, 2002



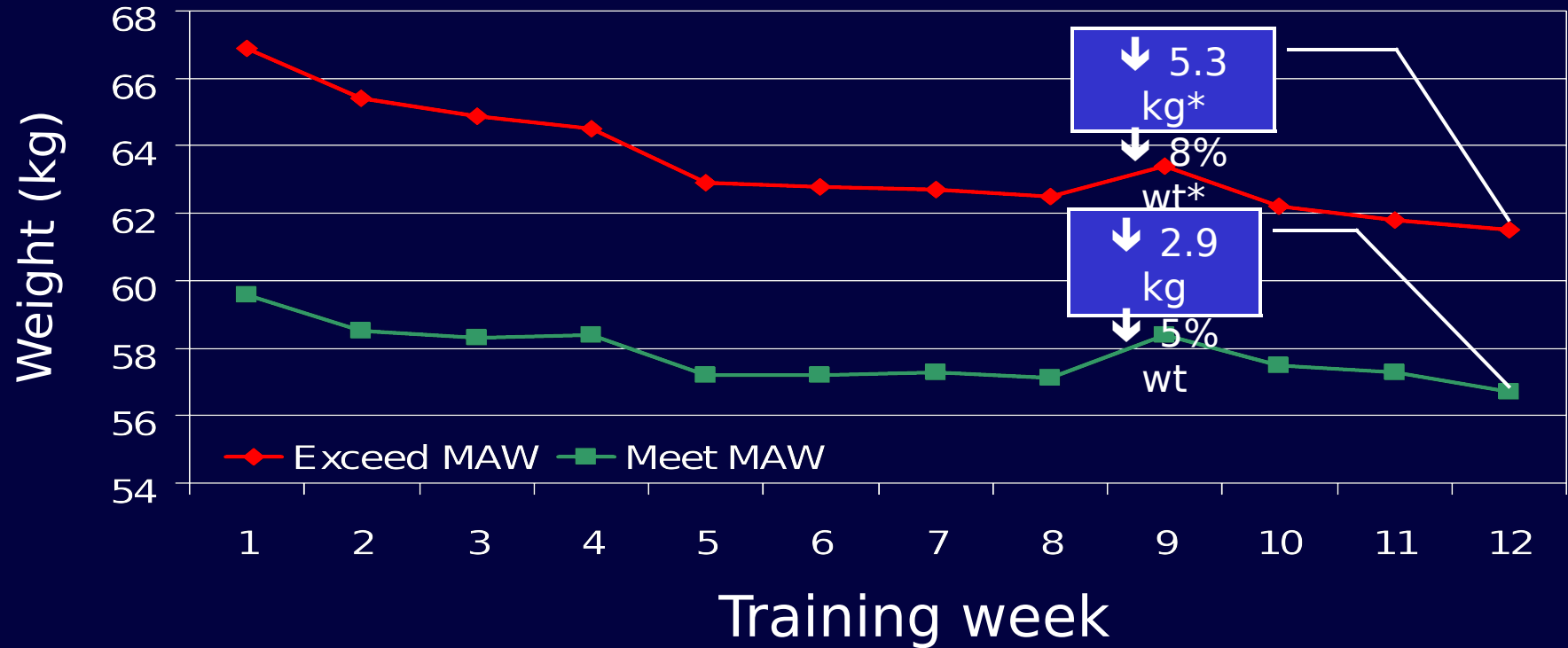
Female weight-for-height standards



AR 600-9, The Army Weight Control Program, 1987

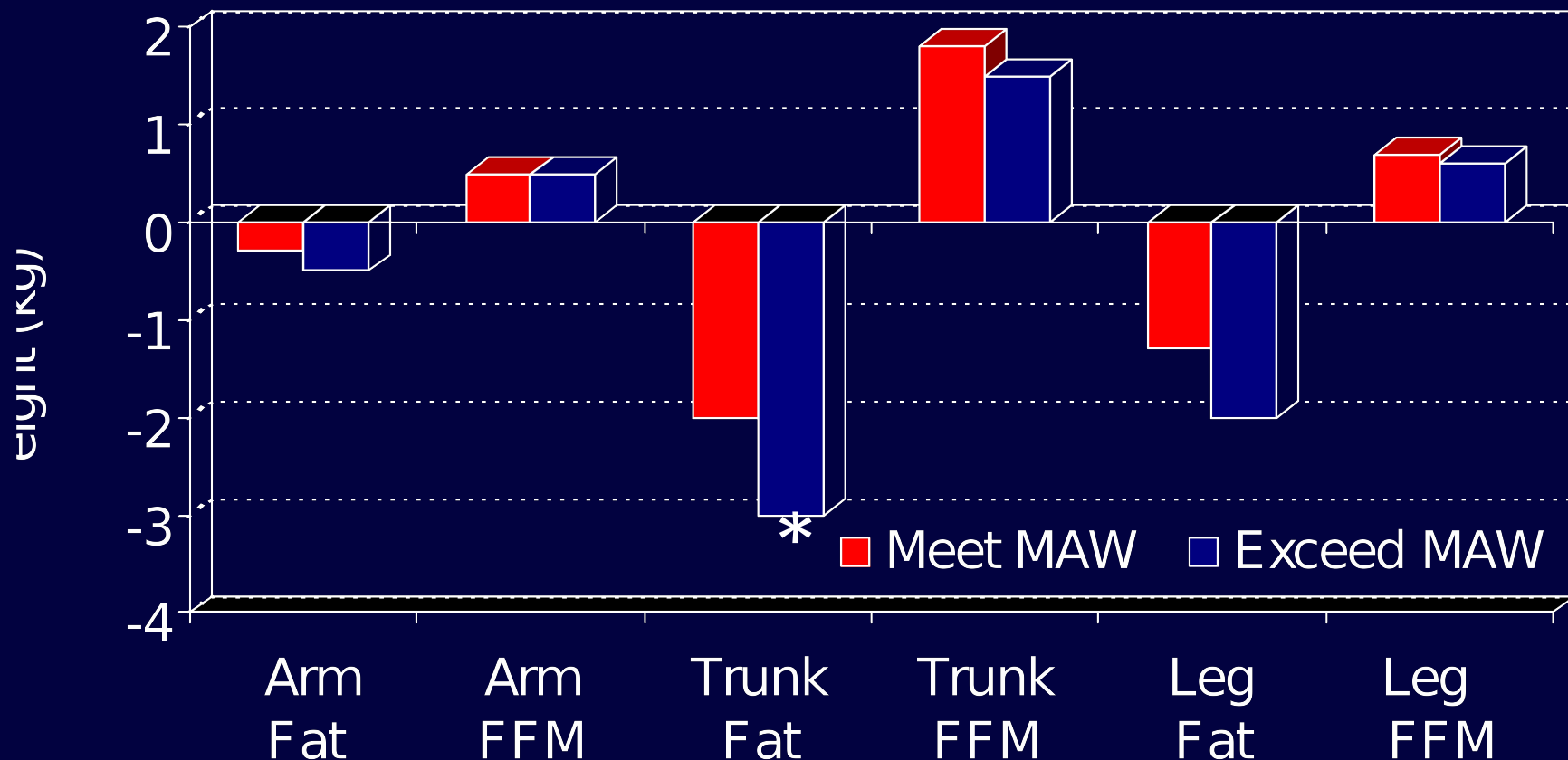
AR 40-501, Standards of Medical Fitness, 2002

USMC recruit training weight changes



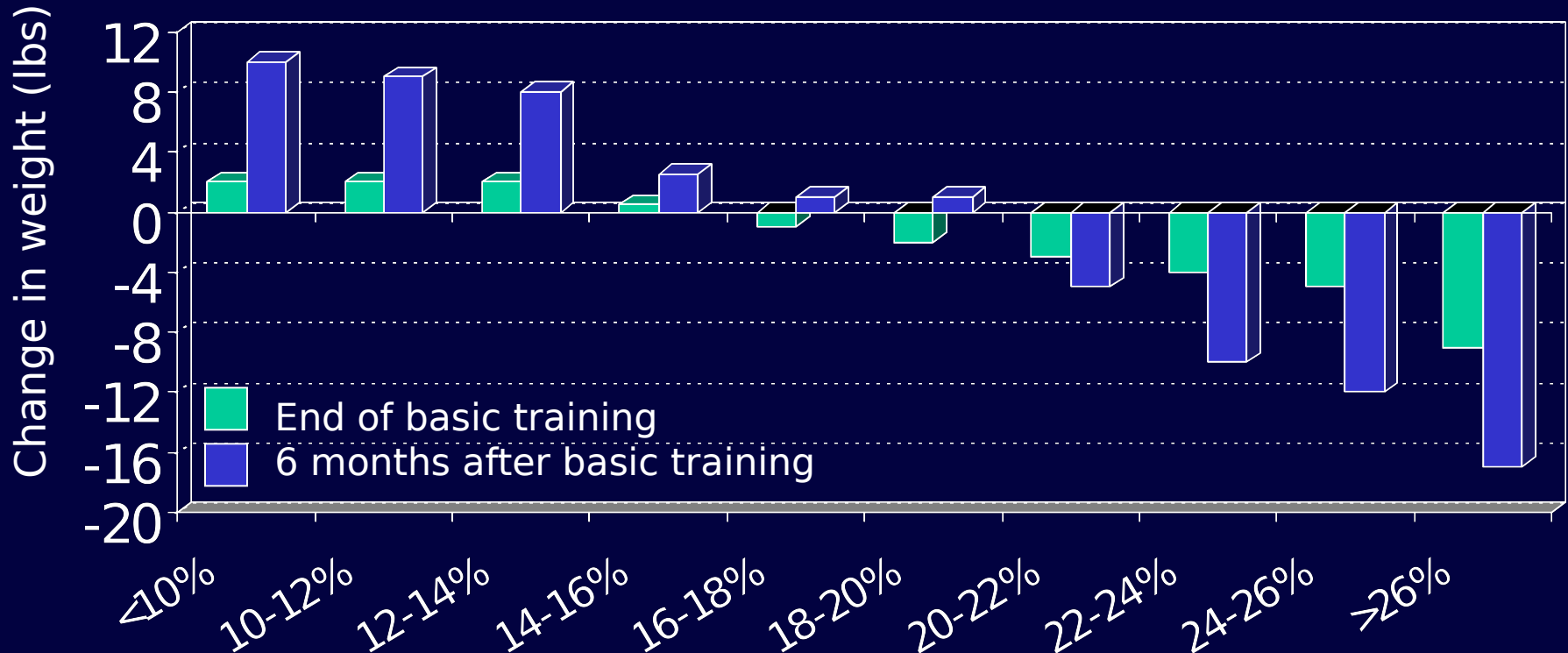
*Different from meet MAW

Changes in regional body composition (USMC)



*Different from Meet MAW, $P \leq 0.05$

Changes in body composition in male recruits



- Fat males lost weight in basic training
 - Continued to lose weight after basic training
- Less overfat males after basic training than before (23% \Rightarrow 13%)
 - 53% of overfat new recruits met their body fat standard at 6 months

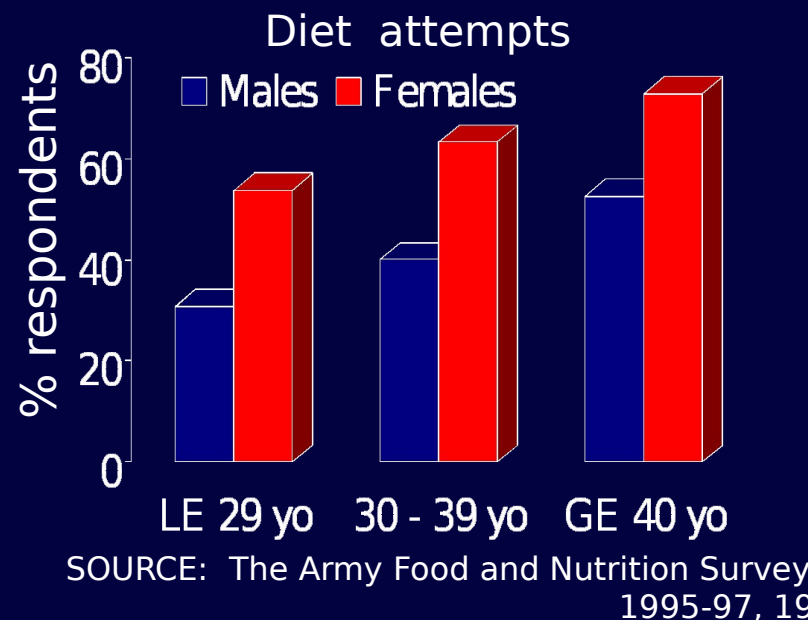
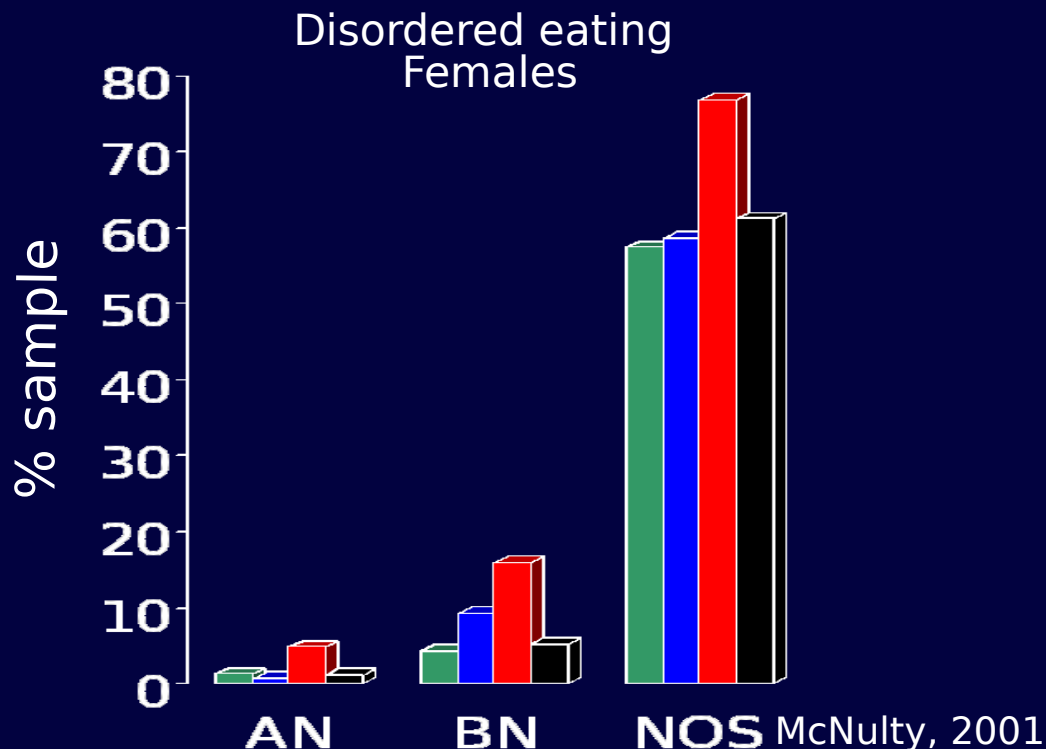
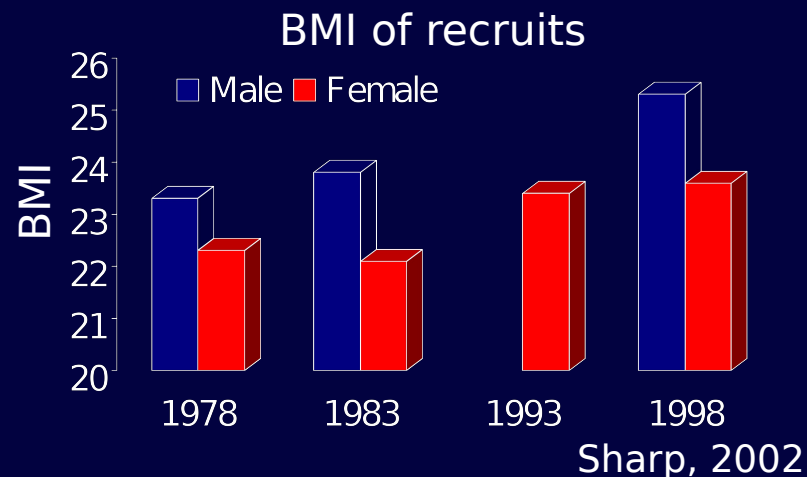
Changes in body composition in female USMC recruits

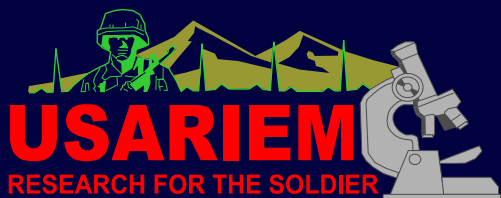


- Fat females lost weight in basic training
 - Gained weight after basic training
- Less overfat females after basic training than before

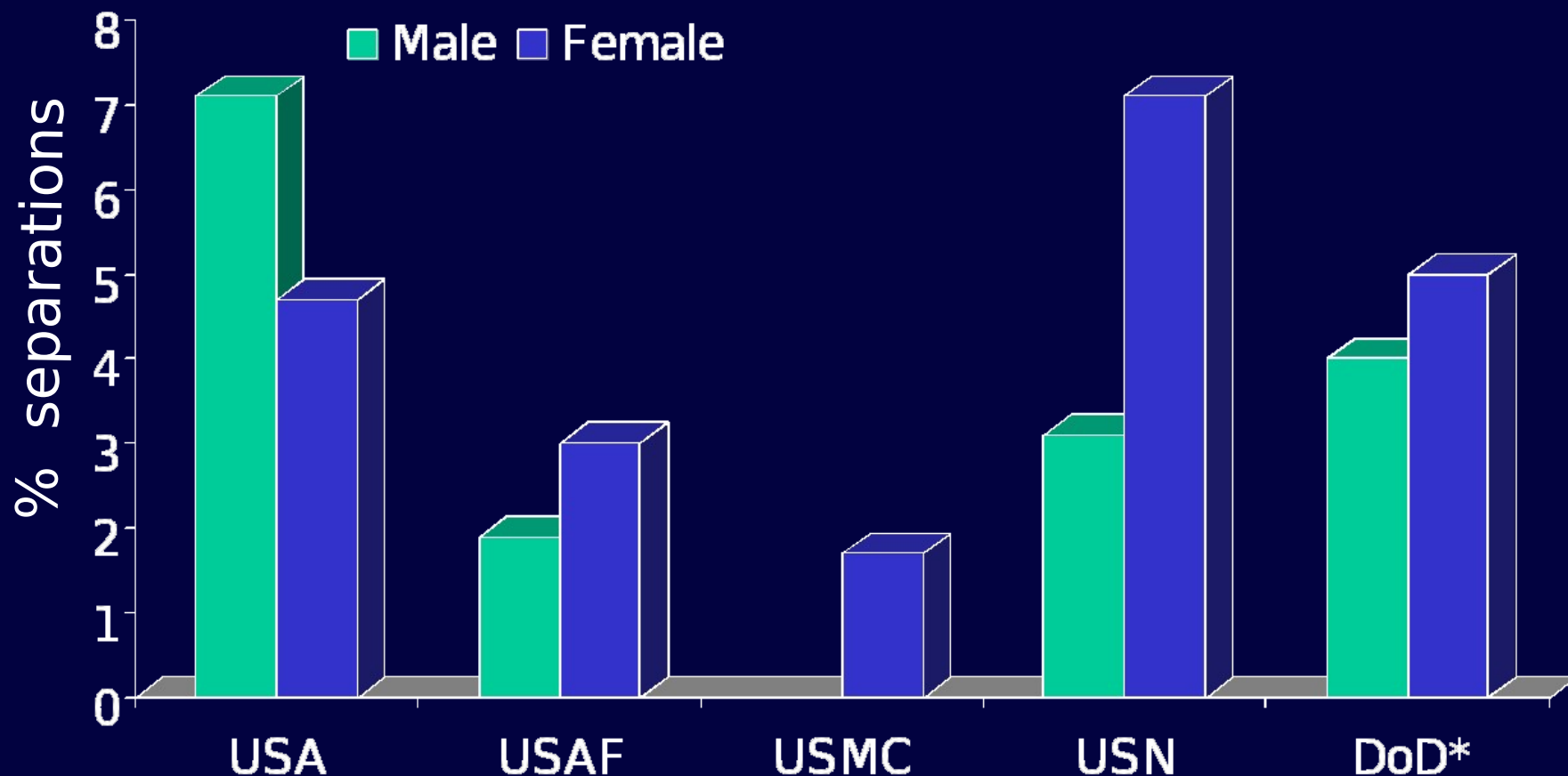
Trends in military personnel

- Army recruits are heavier today.
- Soldiers are dieting to avoid exceeding their screening weight and being 'taped'.
- Extreme eating practices exist.





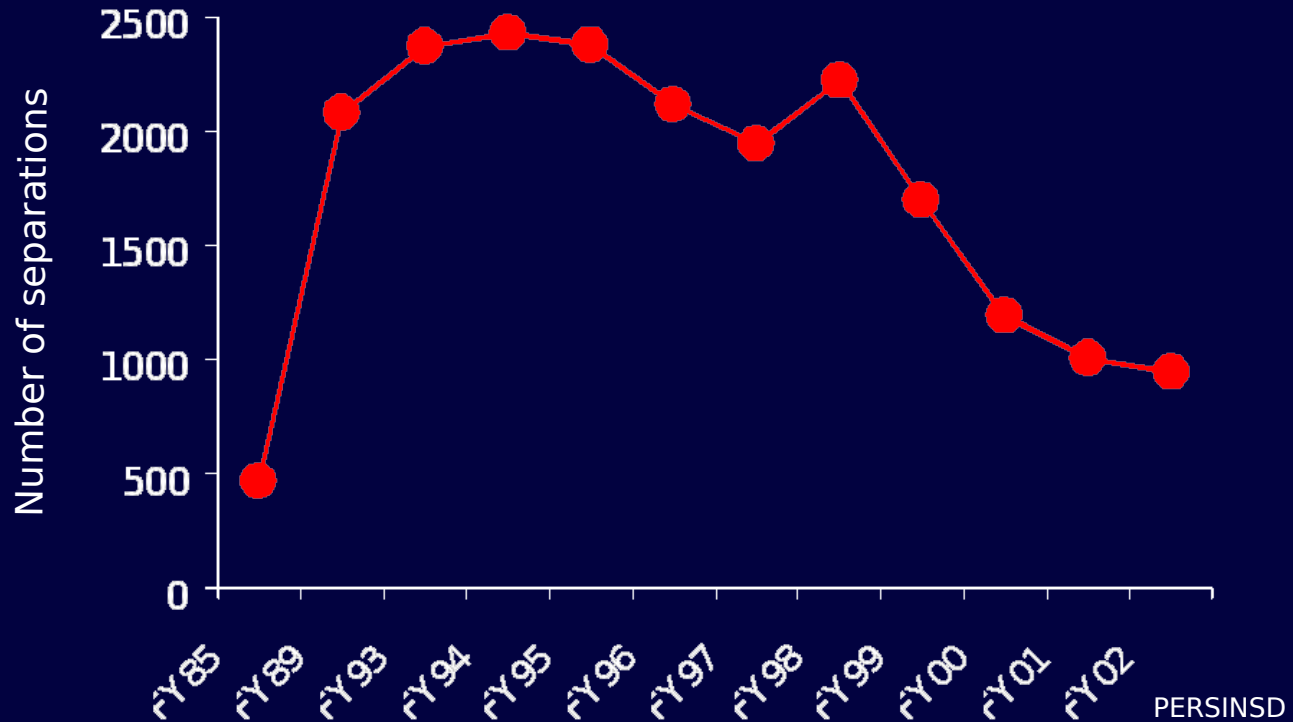
Attrition related to weight 7th – 48th month (entered FY93)



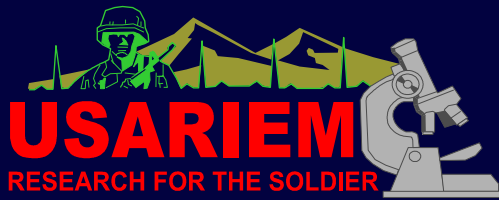
*DoD separations: 1552 male and 380 female soldiers

GAO, 1998

Problem



"I don't eat for two days prior to the drill weekend when I have to be weighed. I exercise a lot each of these mornings and before coming to drill. I take laxatives Friday and Saturday evenings. It hurts at times but I can lose 5 to 10 pounds for the weekend....I think taking my weight off like this is bad, but it is better than getting kicked out of the Army...."



Changes to DoDI 1308.3 and AR 600-9

DoDI 1308.3

- ❶ Establishes range of body weight standards (BMI)
- ❷ Mandates same method to measure body fat
- ❸ Establishes range of body fat standards

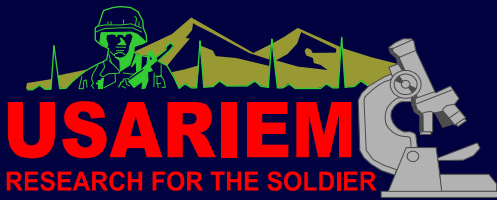
Draft AR 600-9

Adjust screening table weights for women

**No change for men*

Adopt DoD equation for men and women

** No change needed*



Adjustments to female screening table weights

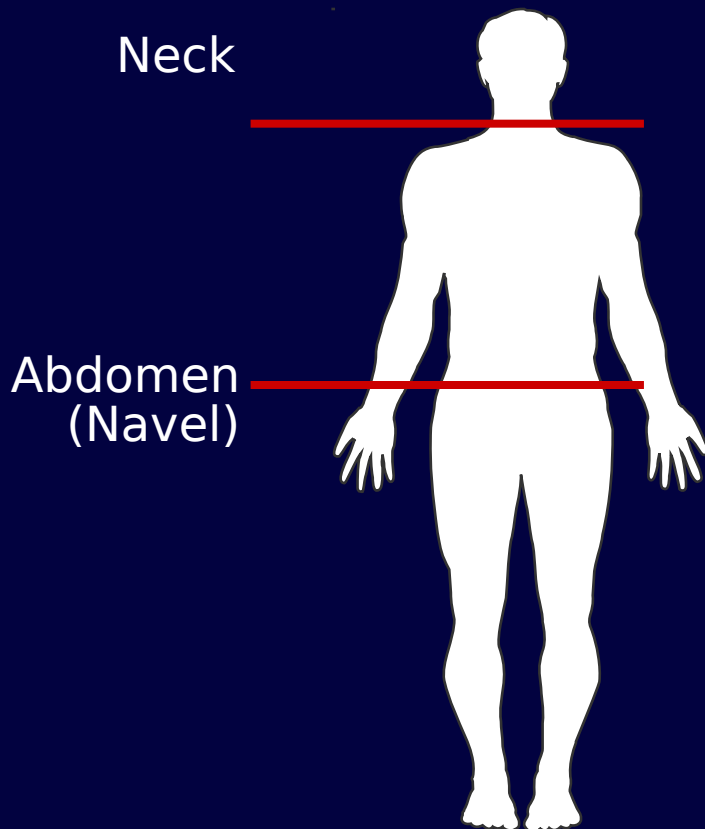
Screening weights will not be more stringent than prescribed (BMI < 25.0 kg/m²)

DoDI

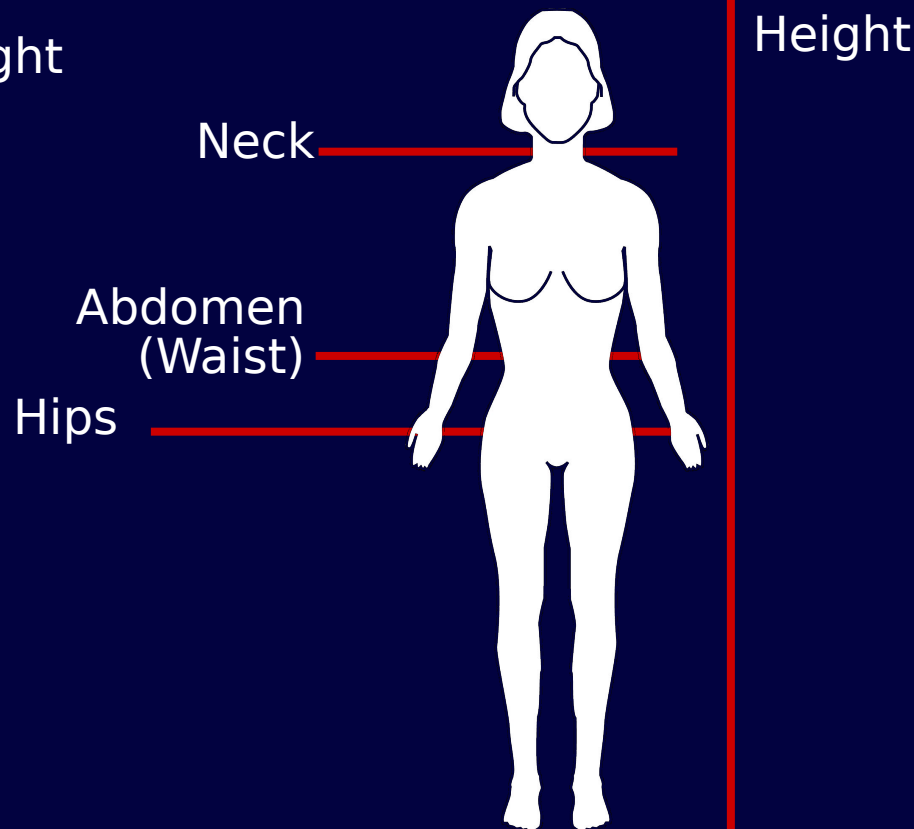
		Female (Current)				Female (Proposed)				DoDI		
Height (inches)	Age	Age			Age	Age			Age	Impact		
		17-20	21-27	28-39		17-20	21-27	28-39		Current	New	
58		109	112	115	119	119	121	122	124			
59		116	120	123	127	124	125	126	128			
60		120	124	127	131	128	129	131	133			
61		125	129	132	137	132	134	135	137			
62		129	133	137	141	136	138	140	141			
63		133	137	141	145	141	143	144	146			
64		137	141	145	149	145	147	149	151			
65		141	146	150	154	150	152	154	156	17-20	133	
66		145	149	154	159	155	156	158	161		145	
67		150	154	159	164	159	161	163	166	21-27	137	
68		154	158	163	168	164	166	168	171		147	
69		159	163	168	173	169	171	173	176	28-39	141	
70		163	167	172	177	174	176	178	181		149	
71		167	172	177	183	179	181	183	186	≥ 40	145	
72		172	177	182	188	184	186	188	191		151	
73		178	183	189	194	189	191	194	197			
74		183	188	194	200	194	197	199	202			
75		189	194	200	206	200	202	204	208			
76		193	199	205	211	205	207	210	213			
77		198	204	210	216	210	213	215	219			
78		203	209	215	222	216	218	221	225			

Body composition: DoD equation

MALE



FEMALE

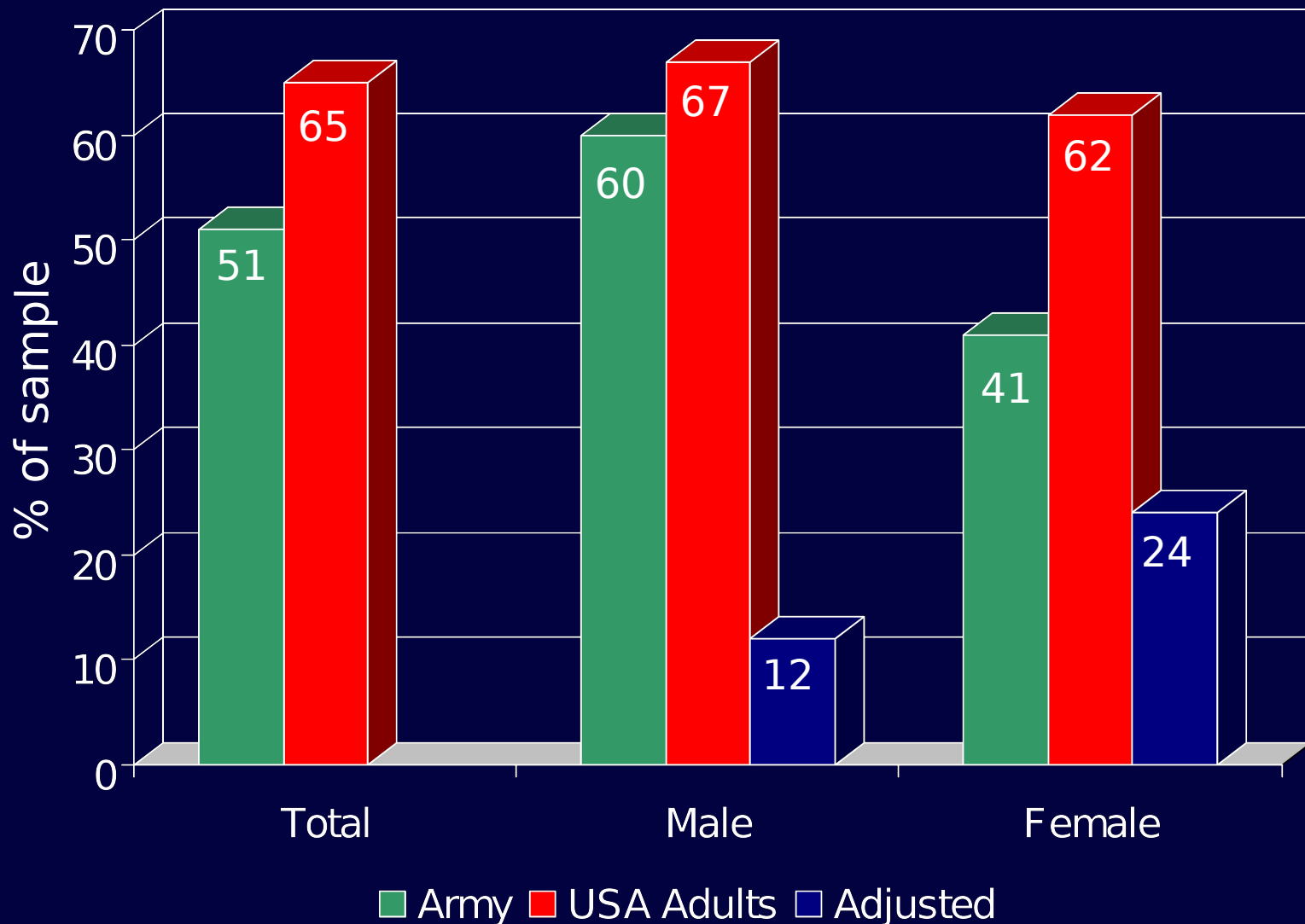


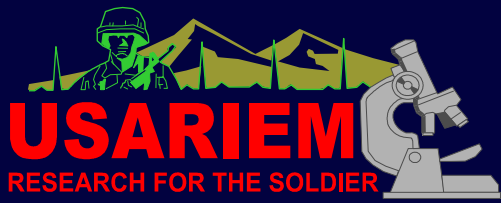
$$86.010 \times \log_{10}(\text{abdomen II} - \text{neck}) - 70.041 \times \log_{10}(\text{height}) + 36.76$$

$$163.205 \times \log_{10}(\text{abdomen I} + \text{hip} - \text{neck}) - 97.684 \times \log_{10}(\text{height}) - 78.387$$

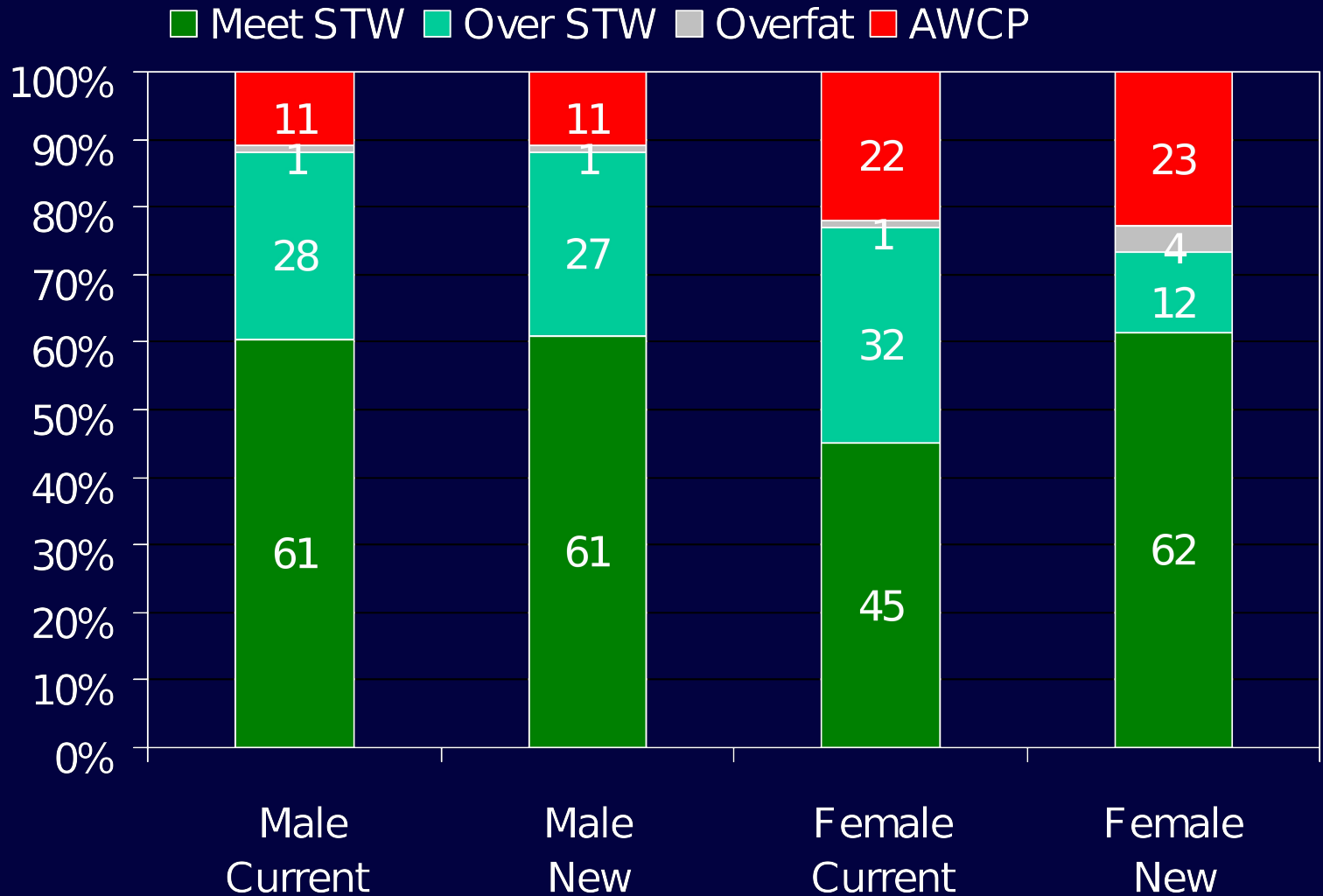
Change in measurement sites for females but not males.

Prevalence of overweight (BMI ≥ 25.0)





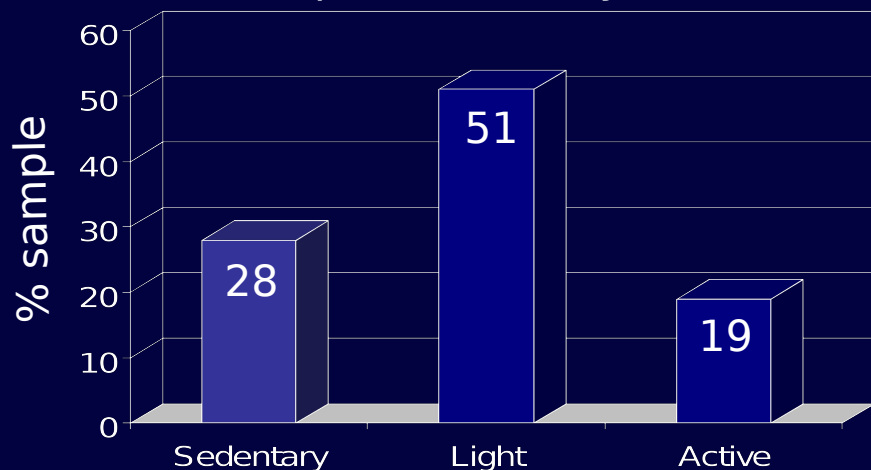
Compliance with AR 600-9



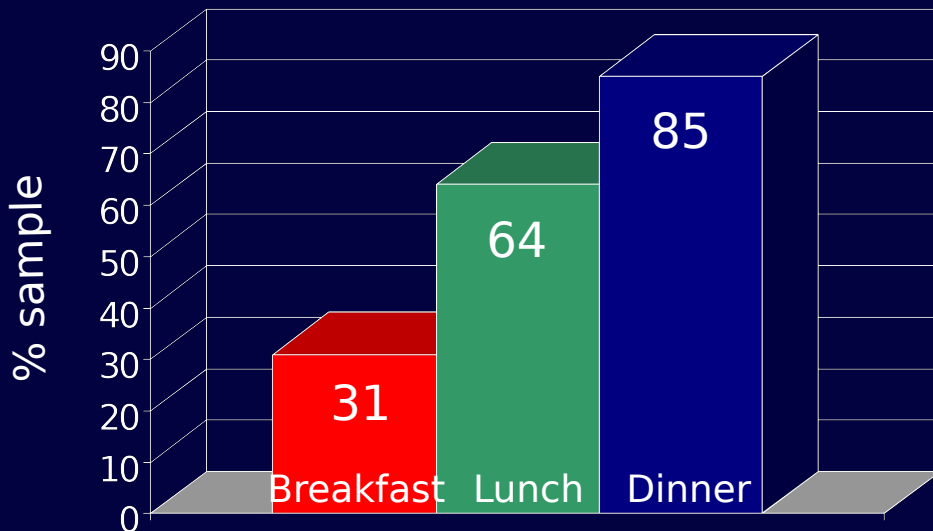
Compliance rate: 89% 88% 77% 74%

Characteristics of AWCP enrollees (preliminary data, n=67)

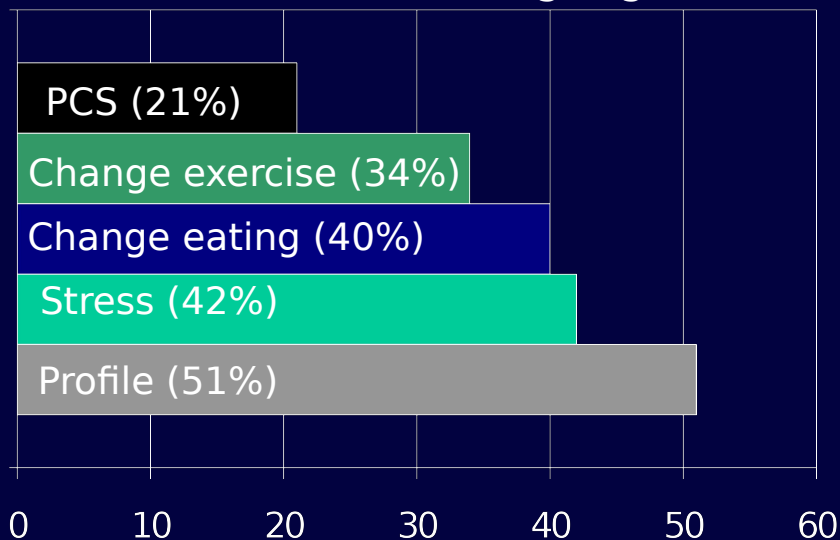
Reported activity level



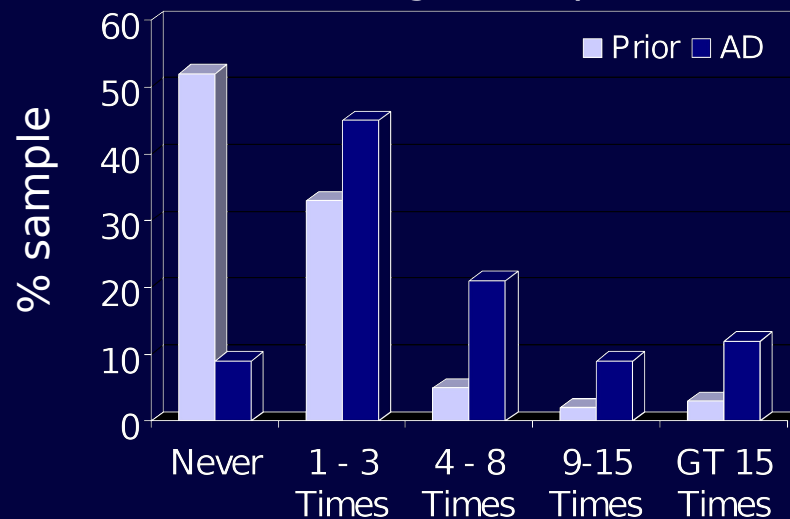
Eat at least 5x / week

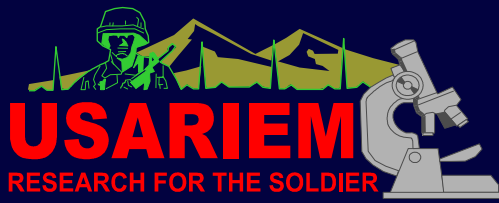


Reasons for weight gain



Dieting attempts





USMC recruit characteristics

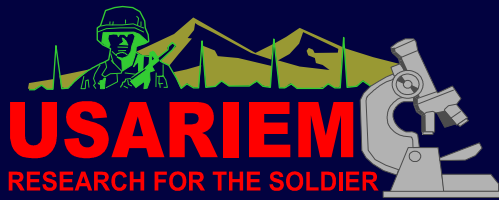
Meet MAW

- 51% mother as overwt
- 24% father as overwt
- 48% never on past diet
- Weight loss 5 – 20 lbs
- 31% weight above ideal
- 62% lettered in athletics
- 30% satisfied – fitness
- 21% used diet aids

Exceed MAW

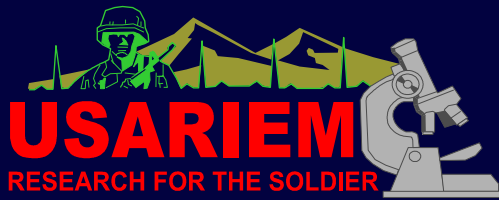
- 59% mother as overwt
- 41% father as overwt
- 77% on diet 1-8 times
- Weight loss 10 – 75 lbs
- 55% weight above ideal
- 41% lettered in athletics
- 18% satisfied – fitness
- 50% used diet aids

Bathalon, 2001



Recruit research questions

- What are effective weight management interventions and strategies, given the unique military environment, that can be applied over the lifecycle of a Soldier?
 - Off-the-shelf
 - Implemented initially during basic training
- Are previously overweight recruits managing their weight?
- What factors are predictive of weight mismanagement?
- How does AD or AR status impact weight management?
- Do male and female Soldiers differ in weight management?
- Do Army standards contribute to disordered eating?



Recruit research concerns

- Training is time intensive:
 - Contact time with recruit
 - Drill Sergeant ‘buy in’
- Work area to conduct research
- ‘Keep it simple’ principle
- Funding and personnel

Next step?